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ABSTRACT

In response to the accountability movement, schools must develop appropriate data sources and use them for decision making. This paper describes a data-collection and data-analysis procedure that can be used at the school building level. The process uses software for survey administration and data analysis for conducting practical automated evaluation routines. The paper offers step-by-step instructions for administering a needs-assessment survey, which was actually conducted in an El Paso, Texas, middle school. The process used Winstar software (Anderson-Bell, 1995) to create a survey, allow respondents to enter data online, and print out a report. Forty-nine teachers completed the survey. Because the software has macro capability, subsequent administrations of a survey can be completely automated. The software can also calculate cross-tabulations and inferential statistical analysis. A copy of the survey is included. (Contains 11 references.) (LMI)

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Practical Low Cost On Line Survey Administration

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Assertive use of evaluation data for decision making at the school building level has been theoretically appropriate and professionally proper for many years. Sadly, data collection and analysis has been largely ignored in practice. One reason is that data collection has not been easy. This paper will discuss one data collection and analysis procedure which is easy enough to be both practical and feasible. The use of software for survey administration and data analysis will make automated evaluation routines practical. Tasks such as course evaluations, needs analyses, and periodic assessments of students at risk, to mention just a few, no longer need to be laborious.

Such data collection and processing ease come none too soon as the stakes in school accountability escalate. Scharrer (1993) warned of these stakes in graphic terms when he reported to the El Paso community that failure to meet certain achievement test expectations would result in severe consequences. Those consequences became reality in one El Paso middle school in 1995 and are becoming equally real in an El Paso area high school in 1996 as entire school staffs are being rotated out because of unacceptable TAAS (Texas Assessment of Academic Skills) test scores. And, the increase in standards has only begun (texas Education Agency, 1995, appended.). Clearly, anyone who wants to keep ahead of the accountability lynch mob needs to develop appropriate data sources and needs to use these data for decision making.

The point of this paper is that the need to collect and use data is genuine and the technology and opportunity to do so is also real. What kinds of data should be collected and how the data should be used is not within the scope of this paper, although this writer would suggest that data collection for the purpose of diagnosis and needs analysis is likely to be more effective than a teaching only to the test strategy.

With currently available technology, using Winstar software (Anderson-Bell, 1995.), available on site license for $395 for 12 computers, one can create a survey, let respondents enter the data on line, and print out a report directly. The software will print to a text file. Because the software has macro capability, subsequent administrations of a survey can be completely automated. The data presented in this paper below was entered by teachers in a middle school and simply copied into the text by the author. This example was a needs assessment for a funded project and the report generation took less than 10 minutes. Most of that time was spent on format decisions for the final document.

Published by Anderson-Bell, Arvada, Colorado, the software to be discussed herein is known as Winstar in Windows form and ABstat in DOS form. The two versions are essentially identical. The system requirements for the software are very modest, less than 2 megabytes of storage are required and only 640k ram are required. For example, one of UTEP's stat labs consists of Sandia Lab surplus IBM XTs which are perfectly adequate for small data sets. With larger data sets, a 386SX computer with 8 megabytes of ram of better is, of course, nicer than the XT because of the faster processing speed. This author has comfortably processed a data set of 400 subjects and 300 questions on a 386SX running Windows 3.1.

When the survey is administered, administration does not have to be on the machine with the statistics software. Typically, a module is down loaded to one or more floppy diskettes and taken to other machines for actual administration. Survey administration, i.e. data collection, can occur on a PC-1 with only 64k ram, if needed and the downloaded files will fit on a 360k floppy if that is all that is available. In the example that follows the small survey module was downloaded onto five floppies and taken to the site school library. Teachers completed the survey at their leisure by typing the word survey and answering the questions on the screen. Data saving was automatic. After the data are collected, the files were combined on the master computer.

The file for the present example was set up as c:\winstar\d-view\survey.abd. It had 37 variables and was limited to a maximum of 512 variables. Forty-nine teachers responded although the software could have handled up to 32000 subjects. The file survey.abd is really composed of four main data files and four backup files. Survey.abd is the data file, survey.abc includes the choice tables, survey.abs is the data collection system file, and survey.abv includes long variable names, or in this case questions. The survey.abs, system file, can be tailored to include customized paths of questions according to the answers given by respondents.

All four files must have the same name, as is customary, but that name must always be survey. To do several surveys, one must create a directory for each project. Once the data are collected, the file names can be changed to any name and the survey.abs file can be discarded. In the present example, the survey files are in a directory called d-view since the survey was administered at Desert View Middle School (Heger, 1995a). But when the data were used in the statistics laboratory, for convenience, the file was renamed dview.abd with companions dview.abc, and dview.abv.

The structure of the survey.abd file in the case looked like this:

Command: STRUCTURE

```
The Current Data Set is c:\winstar\d-view\survey.abd Rev#25
                in use  maximum available
Variables:          37         512
Records:            49       32000
File Size:       47727    20464416
Record Size:       639
Max Records in Memory          166
Variables Defined in Data Set are:
Var Name      Type  Pos Length  Dec ChoiceTbl        Descrip
  1 Q1          C    1      1        Q1              Welcome to the survey.  The next four items
                                                     are practice items to help you warm up.
  2 Q2          C    2     30                        Some questions will be open ended.  They will
                                                     have a space for you to type your ideas as
                                                     shown here:
  3 Q3          C   32      1        Q3              Some questions will be multiple choice with
                                                     letter options like this:
  4 Q4          N   33      1     0                  Some questions will ask for you to select a
                                                     number. For example: Please rate the
                                                     effectiveness of the ruler of Mars on a scale
                                                     of 5 = most excellent to 1 = most inept.
 16 Q16         C  203      1        Y               Can Desert View show through student products
                                                     the result of recent changes?
 36 Q36         C  539     80                        What area(s) should be left unchanged in the
                                                     next year?
 37 FILLER      C  619     20
```

To save space, some questions were omitted from the above illustration.

The categories of the structure appear as columns and include Var, variable number; Name, variable name; Type, data type; Pos, an automatic listing of the starting position of the variable; Length, the desired length of the variable; Dec, fixed number of decimals desired in the variable; ChoiceTbl, the table of options to be presented with the variable; and Descrip, the long variable name or question.

If an N appears under the type column, numerical data is required to be entered and the software functions as a conventional statistical package on such items. If a C is in the type column, any data form can be entered. One can create a variable with open ended responses by having a C under type and a long length, as in questions 2 and 36. If one has a C for data type and places a code under the choice table column, responses are restricted to the choices in a choice table. The question then become a multiple choice item. The code under choice table column references an entries in the survey.abc file to be shown below. Items listed in the descrip column are the questions and are stored in the survey.abv. The last item FILLER does not appear on the survey administration. If one wants to add questions to the existing structure, FILLER is translated into the new items.

The choice table file, survey.abc, is a simple text file that can be edited within the software or by a text editor. When the survey is administered the person responds with the selected letter. Notice that the respondent typed only a letter, such as a, b, or c for the response on these items.

```
Choice tables are in c:\winstar\d-view\survey.ABC
Choice table: Q1
   a=Let's proceed.
   b=The medium is the message.
   c=Progress is sanity.
   d=Slogans are profitable.
   e=A loop is a loop is a loop is

Choice table: Q3
   a=Dick Clark is 16.
   b=Jack Benny is still 39.
   c=Elvis is Nevada governor.
   d=None of the above.
   e=All of the above.

Choice table: A
   a=Strongly agree
   b=Agree
   c=Neutral or no opinion
   d=Disagree
   e=Strongly disagree

Choice table: Y
   a=Yes
   b=Neutral or no opinion
   c=No
```

After the data are collected the COUNT command reports all results with choice tables. The actual survey results follow:

```
Record # 49
Welcome to the survey.  The next four items are practice items to help you warm up.
                                          0                   50                  100
                                  Count     %  |-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|
Let's proceed.                       31  63.3|************************
The medium is the message.            1   2.0|*
Progress is sanity.                   3   6.1|**
Slogans are profitable.               3   6.1|**
A loop is a loop is a loop is         4   8.2|***
                              TOTAL  42  85.7|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|
                                          0                   50                  100
```

Note: One can skip a question by pressing enter, which happened in 7 cases on this warm up item.

```
Some questions will be multiple choice with letter options like this:
                                          0                   50                  100
                                  Count     %  |-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|
Dick Clark is 16.                     4   8.2|***
Jack Benny is still 39.               5  10.2|****
Elvis is Nevada governor.             3   6.1|**
None of the above.                   19  38.8|***************
All of the above.                     9  18.4|*******
                              TOTAL  40  81.6|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|
                                          0                   50                  100

Do changing conditions in the world require schools to change?
                                          0                   50                  100
                                  Count     %  |-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|
Yes                                  45  91.8|************************************
Neutral or no opinion                 1   2.0|*
No                                    1   2.0|*
                              TOTAL  47  95.9|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|
                                          0                   50                  100

Have positive changes already begun at Desert View?
                                          0                   50                  100
                                  Count     %  |-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|
Yes                                  41  83.7|*********************************
Neutral or no opinion                 6  12.2|*****
No                                    2   4.1|**
                              TOTAL  49 100.0|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|
                                          0                   50                  100

Have improvements been made in student activities?
                                          0                   50                  100
                                  Count     %  |-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|
Yes                                  27  55.1|**********************
Neutral or no opinion                 7  14.3|******
No                                   14  28.6|***********
                              TOTAL  48  98.0|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|
                                          0                   50                  100

Are teachers using more and better teaching strategies?
                                          0                   50                  100
                                  Count     %  |-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|
Yes                                  30  61.2|************************
Neutral or no opinion                13  26.5|***********
No                                    6  12.2|*****
                              TOTAL  49 100.0|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|-+-|
                                          0                   50                  100
```

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Are cross curricular efforts being undertaken at Desert View?

	Count	%	0 50 100
Yes	30	61.2	**********
Neutral or no opinion	6	12.2	*****
No	12	24.5	**********
TOTAL	48	98.0	

Have changes occurred in student assessment?

	Count	%	0 50 100
Yes	18	36.7	**********
Neutral or no opinion	11	22.4	*********
No	18	36.7	**********
TOTAL	47	95.9	

Have changes been made in scheduling and in the use of instructional time?

	Count	%	0 50 100
Yes	44	89.8	**********
Neutral or no opinion	3	6.1	**
No	2	4.1	**
TOTAL	49	100.0	

Have changes been made in the advisory period and process?

	Count	%	0 50 100
Yes	40	81.6	**********
Neutral or no opinion	0	0.0	
No	6	12.2	*****
TOTAL	46	93.9	

Do you agree that teachers need to be able to demonstrate to the world that students are learning? Do you also agree that TAAS and other tests don't tell the story very well?

	Count	%	0 50 100
Yes	37	75.5	**********
Neutral or no opinion	3	6.1	**
No	4	8.2	***
TOTAL	44	89.8	

Can Desert View show through student products the result of recent changes?

	Count	%	0 50 100
Yes	31	63.3	**********
Neutral or no opinion	5	10.2	****
No	9	18.4	*******
TOTAL	45	91.8	

Are Desert View students able to exercise better thinking skills than in the past?

	Count	%	0 50 100
Yes	16	32.7	**********
Neutral or no opinion	14	28.6	**********
No	17	34.7	**********
TOTAL	47	95.9	

Are Desert View students reading more effectively than in the past?

	Count	%	0 50 100
Yes	22	44.9	**********
Neutral or no opinion	11	22.4	*****
No	15	30.6	*******
TOTAL	48	98.0	

Is the trend in Desert View at risk statistics positive?

	Count	%	0 50 100
Yes	17	34.7	********
Neutral or no opinion	22	44.9	**********
No	8	16.3	****
TOTAL	47	95.9	

Is student attendance improving?

	Count	%	0 50 100
Yes	18	36.7	********
Neutral or no opinion	21	42.9	**********
No	9	18.4	****
TOTAL	48	98.0	

Is student academic involvement improving?

	Count	%	0 50 100
Yes	14	28.6	*******
Neutral or no opinion	9	18.4	****
No	24	49.0	**********
TOTAL	47	95.9	

Is student participation in school wide activities improving?

	Count	%	0 50 100
Yes	12	24.5	******
Neutral or no opinion	11	22.4	*****
No	24	49.0	**********
TOTAL	47	95.9	

In the next year our change efforts should focus on improving the curriculum... objectives, content, organization, etc.

	Count	%	0 50 100
Strongly agree	24	49.0	**********
Agree	14	28.6	*******
Neutral or no opinion	5	10.2	**
Disagree	3	6.1	*
Strongly disagree	1	2.0	
TOTAL	47	95.9	

In the next year our changes should focus on improving instructional materials and lesson plans.

	Count	%	0 50 100
Strongly agree	12	24.5	******
Agree	16	32.7	********
Neutral or no opinion	7	14.3	****
Disagree	9	18.4	****
Strongly disagree	2	4.1	*
TOTAL	46	93.9	

In the next year our changes should focus on improving assessment.

	Count	%	0 50 100
Strongly agree	16	32.7	**********
Agree	13	26.5	**********
Neutral or no opinion	12	24.5	**********
Disagree	5	10.2	****
Strongly disagree	2	4.1	**
TOTAL	48	98.0	

In the next year our changes should focus on developing new kinds of and better quality student products.

	Count	%	0 50 100
Strongly agree	18	36.7	**********
Agree	20	40.8	**********
Neutral or no opinion	8	16.3	********
Disagree	2	4.1	**
Strongly disagree	1	2.0	*
TOTAL	49	100.0	

In the next year we need to develop new and better scheduling alternatives.

	Count	%	0 50 100
Strongly agree	9	18.4	********
Agree	12	24.5	**********
Neutral or no opinion	7	14.3	*******
Disagree	15	30.6	**********
Strongly disagree	5	10.2	****
TOTAL	48	98.0	

In the next year we should work on ne ideas for community involvement.

	Count	%	0 50 100
Strongly agree	17	34.7	**********
Agree	25	51.0	**********
Neutral or no opinion	5	10.2	****
Disagree	1	2.0	*
Strongly disagree	1	2.0	*
TOTAL	49	100.0	

In the next year we need to work on expanded student activities.

	Count	%	0 50 100
Strongly agree	13	26.5	**********
Agree	16	32.7	**********
Neutral or no opinion	14	28.6	**********
Disagree	3	6.1	**
Strongly disagree	2	4.1	**
TOTAL	48	98.0	

In the next year we need to work on improved advisory processes.

	Count	%	0 50 100
Strongly agree	16	32.7	**********
Agree	11	22.4	**********
Neutral or no opinion	10	20.4	**********
Disagree	6	12.2	*****
Strongly disagree	5	10.2	****
TOTAL	48	98.0	

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Cross tabulations and sub group analyses are fast and easy. The following analysis cross tabs one of the warm up items with one of the serious items.

			Some questions will be multiple choice				
			Dick Clark is 16.	Jack Benny is still 39.	Elvis is Nevada governor.	None of the above.	All of the above.
TOTAL RESPONDENTS		49	4	5	3	19	9
	C	100%	100%	100%	100%	100%	100%
Have changes occurred in student assessment?							
Yes		18	3	1	1	7	1
	C	37%	75%	20%	33%	37%	11%
Neutral or no opinion		11		2		4	3
	C	22%		40%		21%	33%
No		18	1	1	2	7	5
	C	37%	25%	20%	67%	37%	56%
Chi Square			8.1783	CELL<5			
Chi Deg of freedom			8				
Chi Probability			0.41625				

More sensibly, another cross tabulation might be:

			Have changes occurred in student assessment		
			Yes	Neutral or no opinion	No
TOTAL RESPONDENTS		49	18	11	18
	C	100%	100%	100%	100%
Have changes been made in the advisory period and process?					
Yes		40	15	9	15
	C	82%	83%	82%	83%
Neutral or no opinion		0			
	C	0%			
No		6	1	2	2
	C	12%	6%	18%	11%
Chi Square			0.9258	CELL<5	
Chi Deg of freedom			2		
Chi Probability			0.62946		

Inferential statistical analysis was not a part of the survey example used above, although it could have been. Using a different database from the UTEP laboratory, one could do the following analysis.

```
Command: REGR       Missing Value Treatment: Listwise

                *** Multiple Linear Regression ***

Dependent Variable: T_TAR                          90 Valid Records
Coeff of Determ:          0.0280704
Adjusted R Square:        0.0170258      Estimated constant term:        70.3775
Multiple Corr Coeff:       0.167542      Standard Err of Estimate:       6.39183

Analysis of Variance for the Regression:
                        Degrees of      Sum of       Mean of
Source of Variance       Freedom       Squares      Squares       F Test     Prob
      Regression               1       103.836      103.836      2.54154   0.1145
      Residuals               88       3595.29      40.8555
      Total                   89       3699.12

                    Regression   Standardized     Standard
Variable           Coefficient    Coefficient        Error          t        Prob
ID               4.245026E-09       0.167542 2.662759E-09        1.59422   0.1145
```

Here is another example of inferential analysis from the lab.

```
Dependent Variable: WritingTot

Factor    # Levels    Variable
   A             3    Grade
   B             2    GenderRev

                          Sum of       Mean of
Source          DF       Squares      Squares          F         Prob
A                2       2451.56      1225.78       14.9310    0.0000
B                1       3706.66      3706.66       45.1502    0.0000
AB               2       118.497      59.2486      0.721698    0.4866
Residual       370       30375.6      82.0961
Total          375       37037.0

Cell Means / Standard Deviations for Maximum Prob of 0.0500

Factor: A
A                    Mean        Std Dev     n
2                 21.4322        7.93723   118
3                 26.3971        10.9655   136
4                 27.8607        9.40574   122

Factor: B
B                    Mean        Std Dev     n
f                 28.7391        9.12376   184
m                 22.0313        9.59270   192
```

This author's experience is that anyone can learn to use this software to collect, analyze and report data. In fact, this software would be especially useful in schools which encourage students to participate in research and evaluation activities. Crosby (1993.) has shown that high school student evaluation in research and evaluation is feasible, even without this software..

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